

THE SPINNING FIELD AND STRIDULATING APPARATUS
OF PENULTIMATE MALE *MACROGRADUNGULA MOONYA*
(ARANEAE: AUSTRORHILOIDAE: GRADUNGULIDAE)

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The cribellum of penultimate ♂ *Macrogradungula moonya* is essentially bipartite but has an undivided spinning field. On the ALS there is a median cluster of about 20 major ampullate gland spigots, 2 of which are larger than the rest; on the PMS there is a single large minor ampullate spigot and 2 patches of paracribellar spigots (about 60). There is a stridulating file or ridges on the distal outface of the chelicera and a row of 'plucking' setae arising from tubercles on the prolateral surface of the palpal femur. □ *Araneae. Austrochiloidae. Gradungulidae. spinning field, stridulating apparatus.*

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Platnick et al. (1991) included some SEMs of the spinnerets of a juvenile *Macrogradungula moonya* in their study of haplogyne spinnerets. Apart from the possession of a cribellum and paracribellar spigots, this was shown to have greater differentiation of spigots than the cribellate gradungulids. The penultimate ♂ (more than 20mm in body length) was expected to show this more clearly.

SPINNING FIELD

The cribellum (Figs 1,2) is narrow, six times as wide as long; the cribellar spigots are very small, close together and strobilate (Figs 3,4). The anterior spinnerets (ALS) (Figs 5,6) have a median field of about 20 major ampullate gland spigots (Map) of which 2 anterior spigots are a little larger than the rest; the ampullate spigot field is separated by a ridge from numerous piriform spigots (pi). The median spinnerets (PMS) (Figs 7,8,10) have one large minor ampullate spigot (map) with 5 aciniform spigots near its base and 11 aciniform spigots (ac) posterior to it; a large cluster of about 40 paracribellar spigots (pe) antero-medially and a further cluster of about 20 paracribellar spigots latero-distally. The posterior spinnerets (PLS) (Figs 9,11,12) have many aciniform spigots; 2 proximal spigots have wider bases than the others; tartipores (t) which are thought to be traces of spigots present in previous instars (Yu & Codrington, 1990) are present.

Compared with the juvenile ♀ (Platnick et al., 1991), a great increase in the number of spigots on all spinnerets is found. The bases of the parac-

ribellar spigots are long and cylindrical, suggesting that the flat sail-like bases in the smaller spider may have been mechanically compressed to that shape.

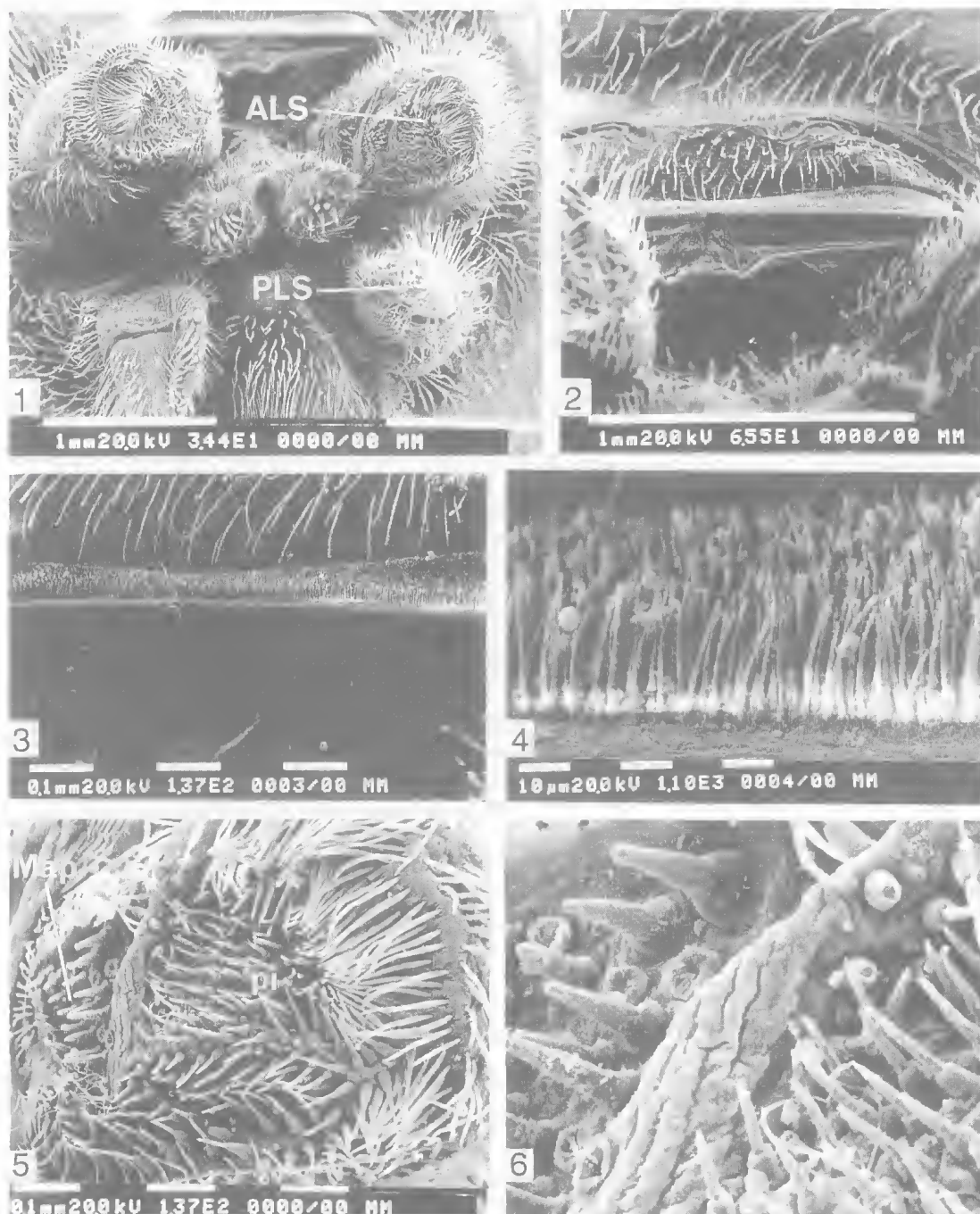
Examination of the ♀ holotype under a light microscope revealed a similar pattern to the penultimate ♂ with an even greater number of piriform spigots on the ALS. The PMS have one large minor ampullate spigot with 2 patches of spigots (paracribellar) and a large number of aciniform spigots becoming larger proximally. The PLS have many aciniform spigots also increasing in size proximally.

The presence of about 20 major ampullate gland spigots on the ALS is similar to that found in the hypochiloids; *Hickmania* and the South American austrochiloids have only 2 Map. Spigots on the PMS are like those in austrochiloids and have the same sculpturing pattern on the base; neither a minor ampullate spigot nor paracribellar spigots are found in the hypochiloids (Platnick et al., 1991). In the cribellate gradungulids the minor ampullate spigot is lost along with the cribellum and paracribellar spigots.

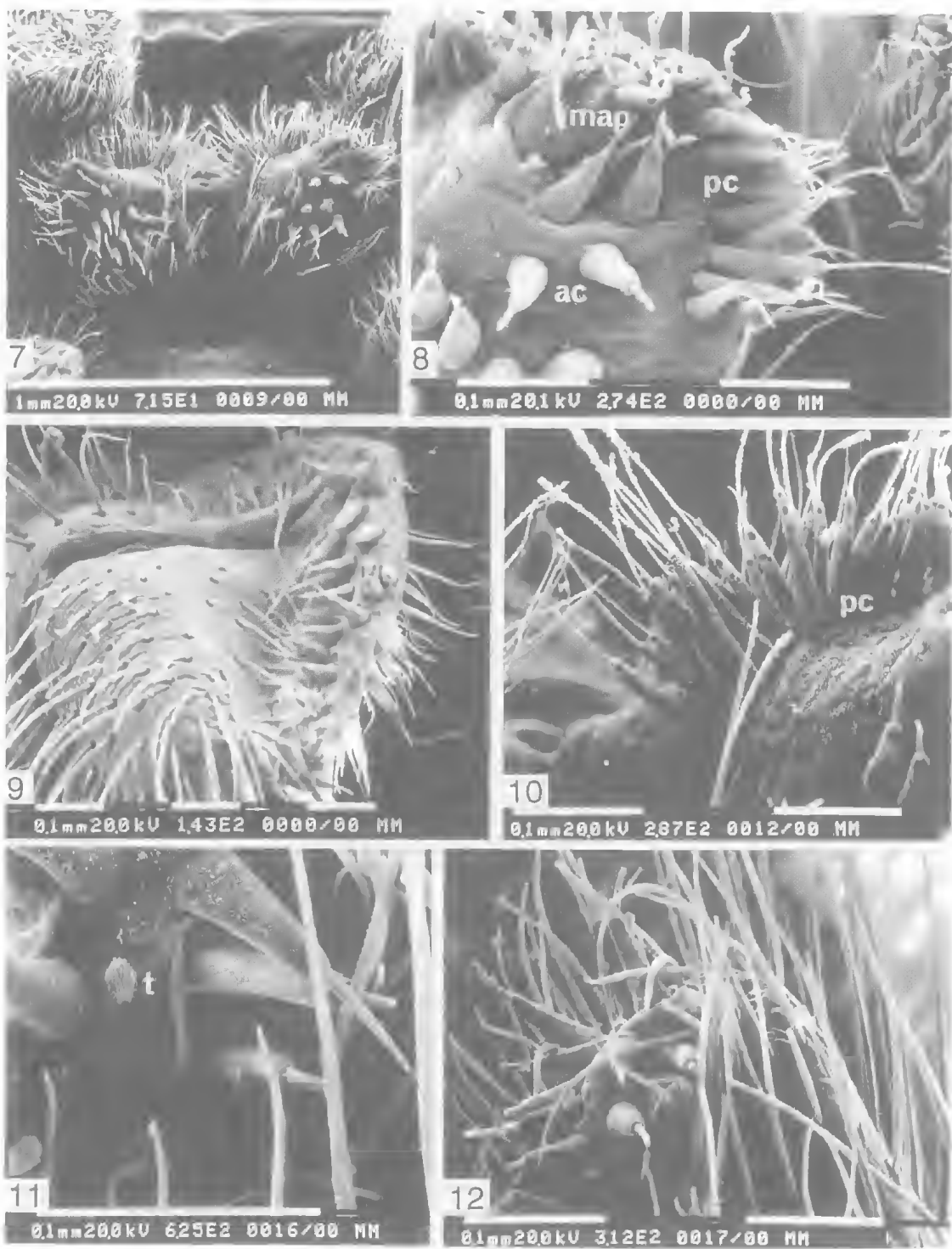
The cribellum is homologous with the anterior median spinnerets of liphistiids and likewise the colulus when present is also homologous (Lehtinen, 1967: 398). Glatz (1972) showed that the paired muscles supplying the cribellum still persist in the colulus i.e. its bipartite history is evident. The cribellum is more than a plate of spigots; it is a movable plate supplied by muscles to each side (Glatz, loc. cit.). In the cribellum even though the cribellar field of spigots may be entire (hypochiloids and austrochiloids) the whole

structure is essentially bipartite. This is clearly illustrated in *Macrogradungula moonya*, where the median posterior edge of the cribellum is

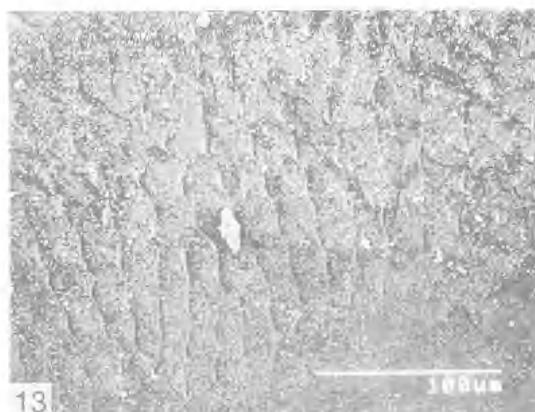
clearly notched (Fig. 2) and the cribellar field is narrow and entire but constricted centrally (Fig. 3) suggesting that separate fields have joined.



FIGS 1-6, penultimate ♂ *Macrogradungula moonya*. 1, spinning field. 2, cribellum. 3,4, cribellar spigots. 5,6, ALS, major ampullate and piriform spigots.



FIGS 7-12, penultimate ♂ *Macrogradungula moonya*. 7,8,10, PMS. 9,11,12, PLS.



FIGS 13,14, penultimate ♂ *Macrogradungula moonyi* stridulatory apparatus. 13, ridged area of chelicera. 14, 'picks' on palpal femur.

Transverse serial sections of the abdomen show paired muscles from a posterior sclerite to the cribellum. Further if we consider the cribellum to be the homologue of the anterior median spinnerets and the colulus to be a functionless remnant of the cribellum then it suggests that the bipartite spinning field may be the plesiomorphic state and the single field derived. In recent cladistic hypotheses, Platnick et al. (1991) and Coddington & Levi (1991) regard the single field as plesiomorphic because the cribellar field of hypochiloids is entire. This single field is also found in the deinopoids, some dictynoids and some claw-

tufted spiders; it may have arisen more than once and is unlikely to be reversible.

STRIDULATING APPARATUS

Contrary to Gray (in Forster, Platnick & Gray, 1987: 90), a stridulatory file consisting of parallel ridges is present on a small area on the distal outface of the chelicera, near the dorsal surface (Fig. 13). Picks in the form of enlarged setae on tubercles are found on the prolateral surface of the palpal femur (Fig. 14).

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